

What is claimed is:

1. Gear pump (1) with variable throughput volume, with two meshing (23) gears (2, 3) with external toothing, which are rotatably held in the working chamber (11) of a pump housing (4), at least one of the two gears (3) being driven from a drive shaft (5) and one of the two gears (2), i.e. preferably the driven gear (2), being shiftable in the direction of its axis (2'), wherein a gap-width (10) defined as the distance measured in axial direction between an essentially plane first interior side wall (11a) of the working chamber (11) of the pump housing (4) and a first front face (2a) of the shiftable gear (2), is designed so as to be variable.
2. Gear pump (1) according to claim 1, wherein the gap-width (10) is variable in a range between 0 and $d/5$, and preferably between 0 and $d/50$, d being the outer diameter of the shiftable gear (2).
3. Gear pump (1) according to claim 1 or 2, wherein a second plane interior side wall (11b) of the working chamber (11) parallel to and opposite of the first interior side wall (11a) is furnished with an essentially cylindrical recess (22) concentric with the gear axis (2') and situated in the area of the second front face (2b) of the shiftable gear (2) facing away from the first front face (2a), the diameter (D) of said recess (22) being larger than the outer diameter d of the gear (2), at least in the area of the shiftable gear (2).
4. Gear pump (1) according to claim 3, wherein a preferably disk-shaped sealing plate (6) is placed in the area of the recess (22), which plate (6) separates the working chamber (11) of the pump housing (4) from the dead space (12) inside the recess (22), the sealing plate (6) being preferably fixedly attached to the shiftable gear (2).
5. Gear pump (1) according to claim 4, wherein the sealing plate (6) has radial relief grooves (13) on the side facing the second front face (2b) of the shiftable gear (2), which are positioned such that each space (14)

between the teeth of the shiftable gear (2) corresponds to at least one relief groove (13).

6. Gear pump (1) according to claim 5, wherein an outlet groove (15) is located in the second interior side wall (11b) of the working chamber (11) opposite the first interior side wall (11a) in the meshing area (23) of the gears (2, 3) on the pressure side, i.e. on the side where the sealing plate (6) is located, which outlet groove (15) is positioned in such a way that each relief groove (13) communicates at least once with the outlet groove (15) during each revolution of the sealing plate (6)
7. Gear pump (1) according to any of claims 4 to 6, wherein a leakage channel departs from the dead space (12).
8. Gear pump (1) according to claim 7, wherein the leakage channel is configured as a preferably helical groove (29) in the pump housing (4) adjacent to the control shaft (7).
9. Gear pump (1) according to any of claims 4 to 8, wherein the dead space (12) is flow-connected via a relief passage (25) with a pressure sink, preferably to the suction side (8) or the pump environment, the relief passage (25) being preferably furnished with a pressure relief valve (26) opening in the direction of the pressure sink.
10. Gear pump (1) according to any of claims 4 to 9, wherein the sealing plate (6) has at least one sealing groove (27) in its side wall, which groove (27) extends along the entire circumference.
11. Gear pump (1) according to any of claims 1 to 10, wherein the shiftable gear (2) and preferably also the sealing plate (6) are rigidly mounted on a control shaft (7) which rotates in the pump housing (4) and can be shifted in the direction of axis (2').
12. Gear pump (1) according to claim 11, wherein the control shaft (7) is furnished with at least one pressure plunger (17) to effect the axial shift,

which plunger (17) cooperates with a pressure chamber (19) containing a pressure medium.

13. Gear pump (1) according to claim 12, wherein the pressure medium is identical with the medium to be pumped and the pressure chamber (19) is flow-connected to the pressure side (9) of the gear pump(1).
14. Gear pump (1) according to claim 12, wherein the pressure chamber (19) is connected with an external pressure source or a clean-oil control device.
15. Gear pump (1) according to any of claims 11 to 14, wherein a restoring spring (28) acts on the control shaft (7) thus counteracting displacement by the pressure plunger (17).
16. Gear pump (1) according to any of claims 11 to 15, wherein the control shaft (7) is shifted, at least in one direction, by an electric motor.